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Figure 1: Nucleic Acid coding sequence human histamine H4

ATGCCAGATACTAATAGCACAATCAATTTATCACTAAGCACTCGTGTTACTTTAGCATT
TTTATGTCCTTAGTAGCTTTTGCTATAATGCTAGGAAATGCTTTGGTCATTTTAGCTTTTG
TGGTGGACAAAAACCTTAGACATCGAAGTAGTTATTTTTTCTTAAGTGGCCATCTCTG
ACTTCTTTGTGGGTGTGATCTCCATTCTTTGTACATCCCTCACACGCTGTTTGAATGGG
ATTTTGGAAAGGAAATCTGTGTATTTGGCTCACTACTGACTATCTGTTATGTACAGCAT
CTGTATATAACATTGTCCTCATCAGCTATGATCGATACCTGTCAGTCTCAAAATGCTGTGT
CTTATAGAACTCAACATACTGGGGTCTTGAAGATTGTTACTCTGATGGTGGCCGTTTGG
GTGCTGGCCTTCTTAGTGAATGGGCCAATGATTCTAGTTTCAGAGTCTTGAAGGATGA
AGGTAGTGAATGTGAACCTGGATTTTTTTCGGAATGGTACATCCTTGCCATCACATCATT
CTTGAATTCGTGATCCCAGTCATCTTAGTCGCTTATTTCAACATGAATATTTATTGGAG
CCTGTGGAAGCGTGATCTCAGTAGGTGCCAAAGCCATCCTGGACTGACTGCTGTCT
CTTCCAACATCTGTGGACACTCATTAGAGGTAGACTATCTTCAAGGAGATCTCTTTCTG
CATCGACAGAAGTTCCTGCATCCTTTTCATTAGAGAGACAGAGGAGAAAGAGTAGTCTC
ATGTTTTCTCAAGAACCAAGATGAATAGCAATACAATTGCTTCCAAAATGGGTTCTCT
CTCCCAATCAGATTCTGTAGCTCTTACCAAAGGGAACATGTTGAACTGCTTAGAGCCA
GGAGATTAGCCAAGTCACTGGCCATTCTTTAGGGGTTTTTGCTGTTTGTGGGCTCCAT
ATTCTCTGTTCACAATTGTCCTTTCATTTATTCCTCAGCAACAGGTCCTAAATCAGTTTG
GTATAGAATTGCATTTTGGCTTCAGTGGTTCAATTCCTTTGTCAATCCTCTTTTGTATCCA
TTGTGTCACAAGCGCTTTCAAAGGCTTTCTTGAAAAATTTTGTATAAAAAAGCAACC
TCTACCATCACAACACAGTCGGTCAGTATCTTCTTAA

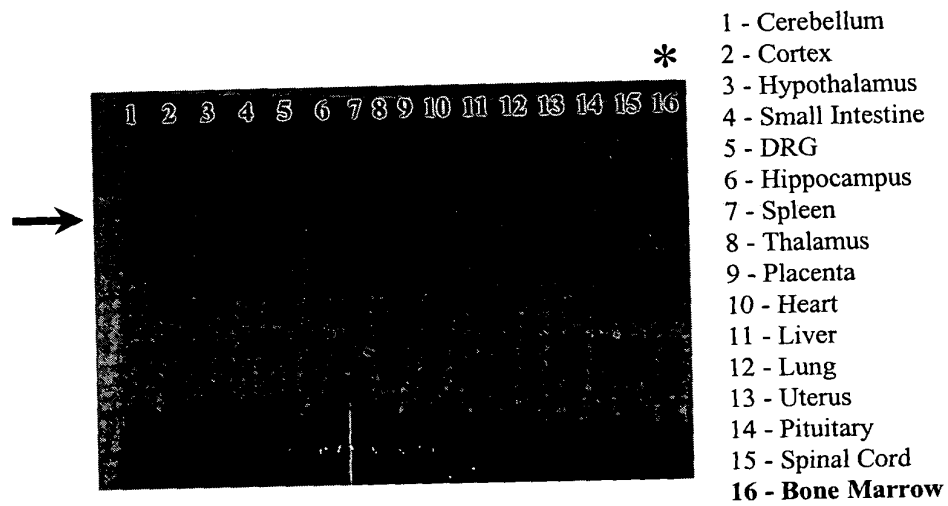
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Figure 2: Amino acid sequence human histamine H4 receptor

Met Pro Asp Thr Asn Ser Thr Ile Asn Leu Ser Leu Ser Thr Arg Val Thr Leu
Ala Phe Phe Met Ser Leu Val Ala Phe Ala Ile Met Leu Gly Asn Ala Leu Val
Ile Leu Ala Phe Val Val Asp Lys Asn Leu Arg His Arg Ser Ser Tyr Phe Phe
Leu Asn Leu Ala Ile Ser Asp Phe Phe Val Gly Val Ile Ser Ile Pro Leu Tyr
Ile Pro His Thr Leu Phe Glu Trp Asp Phe Gly Lys Glu Ile Cys Val Phe Trp
Leu Thr Thr Asp Tyr Leu Leu Cys Thr Ala Ser Val Tyr Asn Ile Val Leu Ile
Ser Tyr Asp Arg Tyr Leu Ser Val Ser Asn Ala Val Ser Tyr Arg Thr Gln His
Thr Gly Val Leu Lys Ile Val Thr Leu Met Val Ala Val Trp Val Leu Ala Phe
Leu Val Asn Gly Pro Met Ile Leu Val Ser Glu Ser Trp Lys Asp Glu Gly Ser
Glu Cys Glu Pro Gly Phe Phe Ser Glu Trp Tyr Ile Leu Ala Ile Thr Ser Phe
Leu Glu Phe Val Ile Pro Val Ile Leu Val Ala Tyr Phe Asn Met Asn Ile Tyr
Trp Ser Leu Trp Lys Arg Asp His Leu Ser Arg Cys Gln Ser His Pro Gly Leu
Thr Ala Val Ser Ser Asn Ile Cys Gly His Ser Phe Arg Gly Arg Leu Ser Ser
Arg Arg Ser Leu Ser Ala Ser Thr Glu Val Pro Ala Ser Phe His Ser Glu Arg
Gln Arg Arg Lys Ser Ser Leu Met Phe Ser Ser Arg Thr Lys Met Asn Ser Asn
Thr Ile Ala Ser Lys Met Gly Ser Phe Ser Gln Ser Asp Ser Val Ala Leu His
Gln Arg Glu His Val Glu Leu Leu Arg Ala Arg Arg Leu Ala Lys Ser Leu Ala
Ile Leu Leu Gly Val Phe Ala Val Cys Trp Ala Pro Tyr Ser Leu Phe Thr Ile
Val Leu Ser Phe Tyr Ser Ser Ala Thr Gly Pro Lys Ser Val Trp Tyr Arg Ile
Ala Phe Trp Leu Gln Trp Phe Asn Ser Phe Val Asn Pro Leu Leu Tyr Pro Leu
Cys His Lys Arg Phe Gln Lys Ala Phe Leu Lys Ile Phe Cys Ile Lys Lys Gln
Pro Leu Pro Ser Gln His Ser Arg Ser Val Ser Ser

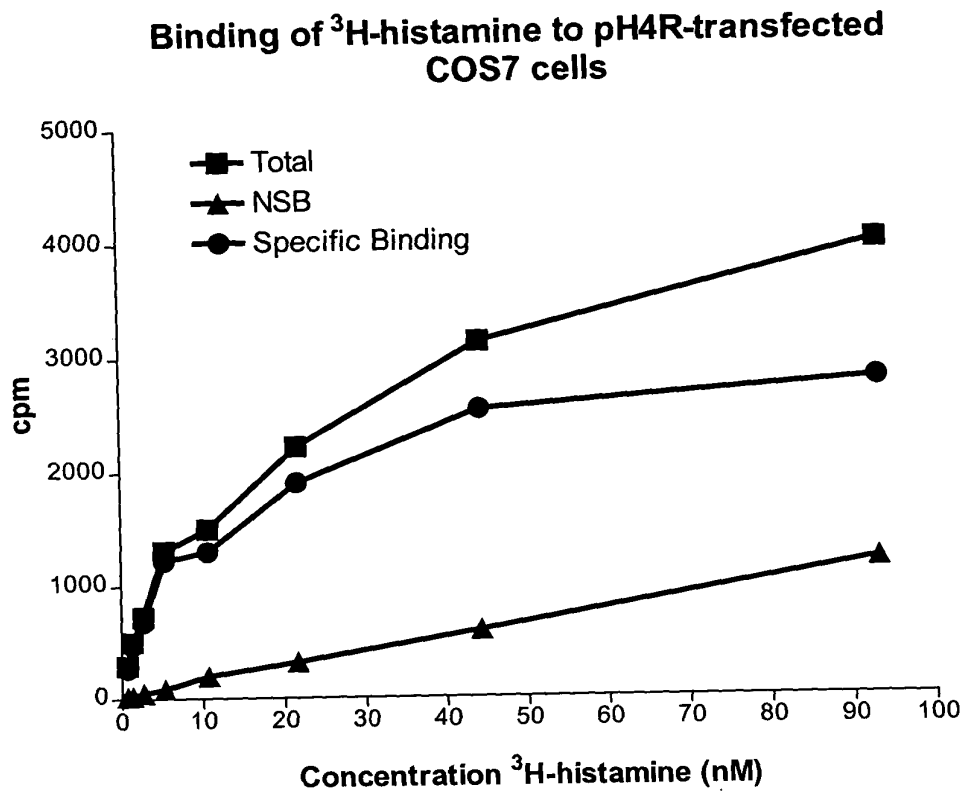
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Figure 3: Tissue Distribution of human histamine H4 receptor



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Figure 4: Binding of [³H]-histamine to pH4R expressing COS7 cells.



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FIGURE 5A

Mouse H4 DNA coding region (SEQ.ID.NO.:5)

ATGTCGGAGTCTAACAGTACTGGCATCTTGCCACCAGCTGCTCAGGTCCCCTTGGCATTTTTAATGT
CTTCATTTGCCTTTGCTATAATGGTAGGCAATGCTGTGGTCATCTTAGCCTTTGTGGTGGACAGAAA
CCTTAGACATCGAAGTAATTATTTTTTTCTTAATTTGGCTATTTCTGACTTCCTCGTGGGTTTGATT
TCCATTCCCTCTGTACATCCCTCACGTGTTGTTTAACTGGAATTTTGGAAGTGAATCTGCATGTTTT
GGCTCATTACTGACTATCTTTTGTGCACCGCATCTGTCTACAATATTGTCCTCATTAGCTACGATCG
ATACCAGTCAGTTTCAAATGCTGTGTCTTATAGGGCTCAACACACTGGCATCATGAAGATTGTTGCT
CAAATGGTGGCTGTTTGGATACTGGCTTTCTTGGTAAATGGCCCGATGATTCTGGCTTCAGATTCTT
GGAAGAACAGCACGAACACAAAGGACTGTGAGCCTGGCTTTGTTACAGAGTGGTACATCCTCACCAT
TACAATGCTCTTGGAATTCCTGCTTCCTGTCATCTCTGTGGCTTATTTCAATGTACAGATTTACTGG
AGCCTGTGGAAGCGTAGGGCTCTCAGTAGGTGCCCTAGCCATGCTGGATTCTCCACTACCTCTTCCA
GTGCTTCAGGACACTTACACAGAGCTGGGGTGGCTTGCAAGACAAGTAATCCTGGATTGAAGGAATC
AGCTGCATCTCGTCACTCAGAAAGTCCTCGAAGAAAGAGCAGCATCCTGGTGTCTTAAGGACTCAC
ATGAACAGCAGTATCACTGCCTTCAAAGTGGGTTTCCTTCTGGCGATCGGAAAGTGCAGCGCTTCGCC
AAAGGGAGTACGCAGAGCTTCTCAGAGGCAGGAAGCTAGCCAGGTCACTGGCCATCCTTCTGAGCGC
TTTTGCCATTTGCTGGGCTCCATACTGTCTGTTACAATTGTCTTTCAACTTACCCAGAACGGAA
CGCCCCAAATCGGTGTGGTACAGCATTGCCTTCTGGCTGCAATGGTTCAATTCGTTTGTTAATCCCT
TTCTGTACCCTTTGTGTACAGGCGTTTCCAGAAGGCTTCTGGAAGATACTTTGTGTGACAAAGCA
ACCAGCGCTGTCACAGAACCAGTCAGTATCTTCTTGA

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FIGURE 5B

Rat H4 DNA coding region (SEQ.ID.NO.:6)

ATGTCGGAGTCTAACGGCACTGACGTCTTGCCACTGACTGCTCAAGTCCCCCTTGGCATTTTTAATGT
CCCTGCTTGCTTTTGCTATAACGATAGGCAATGCTGTGGTCATTTTAGCCTTTGTAGCAGACAGAAA
CCTTAGACATCGAAGTAATTATTTTTTTCTTAATTTGGCTATTTCTGACTTCTTCGTGGGTGTCATC
TCCATTCCCTCTGTACATCCCTCACACGCTGTTTAACTGGAATTTGGAAGTGGAATCTGCATGTTTT
GGCTCATTACTGACTATCTTTTGTGCACAGCATCCGTCTACAGTATTGTCCCTCATTAGCTACGATCG
ATACCAGTCAGTTTCAAACGCTGTGCGTTATAGAGCACAGCACACTGGCATCCTGAAAATTGTTGCT
CAAATGGTGGCTGTTTGGATACTGGCTTTCTTGGTCAATGGCCCAATGATTCTGGCTTCGGATTCTT
GGAAGAACAGCACCAACACAGAGGAGTGCGAGCCTGGCTTTGTTACTGAGTGGTACATCCTCGCCAT
TACAGCATTCTTGAATTCCTGCTCCCTGTCTCCTTGGTGGTCTATTTCAAGTGTACAGATTTACTGG
AGCCTGTGGAAGCGTGGGAGTCTCAGTAGGTGCCCTAGCCACGCTGGATTTCATCGCTACCTCTTCCA
GGGGCACTGGACACTCACGCAGAACTGGGTGGCTTGTAGGACAAGTCTTCCTGGATTAAAGGAACC
AGCCGCATCCCTTCATTTCAGAAAGTCCACGAGGAAAGAGCAGTCTCCTGGTGTCTTAAGGACTCAC
ATGAGCGGTAGTATCATCGCCTTCAAAGTGGGTTCCTTCTGCCGATCAGAAAGCCAGTGCTTCACC
AGAGAGAGCACGTGGAGCTTCTCAGAGGCAGGAAGCTAGCCAGGTCGCTAGCTGTCTCCTGAGTGC
TTTTGCCATTTGCTGGGCTCCGTATTGCCTGTTACAATTGTTCTTTCAACTTATCGCAGAGGGGAG
CGCCCCAAATCGATTTGGTACAGCATAGCCTTTTGGCTACAGTGGTTCAATTAATTAATCCCT
TTCTATACCCTTTGTGCCACAGACGTTTCCAGAAGGCTTTCTGGAAGATACTCTGTGTGACAAAGCA
ACCAGCACCTTCACAGACCCAGTCAGTATCTTCTTGA

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FIGURE 5C

Guinea Pig H4 DNA coding sequence (SEQ.ID.NO.:7)

ATGTTGGCAAATAACAGTACAATCGCCTTAACATCAATTAAAAATTTCTTTGACATTTTTTA
ATGTCTTTACTAGCTATTGCTATAATGTTAGGCAATGTCGTGGTCATTTTAGCTTTTATTG
TGGACAGAAATCTTAGACATCGAAGTAATTACTTTTTTCTTAACTTGGCCATTGCAGACT
TCTTTGTGGGTGCAATTGCAATTCCTCTGTACATACCTTCCTCGCTGACTTACTGGACTT
CTGGAAAGCAAGCTTGTGATTTTGGCTCATTA CTGACTATCTTTTATGtACAGCATCTGT
GTATAATATTGTCCTCATCAGCTACGATCGCTACCAGTCAGTCTCAAATGCCGTGTGGTA
TAGAGCTCAGCACTCTGGCACCTGGAAAATTGCTACTCAGATGGTGGCTGTTTGGATAT
TCTCCTTCATGACAAATGGGCCGATGATTCTGATTTTCAGACTCTTGGCAGAATAGCACT
ACAGAATGTGAACCTGGATTTTTAAAAAAGTGGTACTTTGCTCTCCCTACATCATTATTG
GAATTCCTGATCCCCATCTTGTTAGTTGCTTATTTTCAGCGCCCATATTTACTGGAGCCTG
TGGAAGCGAGAGAAACTGAGCAGGTGCCTCAGCCACCCTGTA CTCCCCCTCTGACTCTTC
CAGCAGTGACCACGGA CACTCCTGCAGACAGGACCCCGATTCAAGGGCGACTCTGCCA
GCACGGAAAGAAACA ACTGCCTCTCTTGGTTTCAGACAAGTCACGGAGAAAGAGCAGTC
TCTTGTTTTCCATAAGAGCCTACAAGAACAGCAATGTGATCGCTTCCAAAATGGGCTTC
CTCTCCCACTCAGATTCCCTGGCTCTTCAGCAAAGGGAACATATCGAACTTTTCAGAGC
CAGGAAATTAGCCAAGTCACTGGCCATACTCTTAGCAGCTTTTGCCATTTGCTGGGCTCC
ATATTCACTGACTACAGTTATCTACTCATTTTTTCTGAAAGGAACTTGACTAAATCAAC
CTGGTACCATACTGCCTTTTGGCTCCAGTGGTTCAATTCCTTTGTTAATCCCTTTTTGTAT
CCATTGTGTCACAAACGTTTTCAGAAGGCTTTCCTGAAAATACTTCCTGTGAGAAGGCA
ATCCACGCCACCACACAACCGCTCAATATCCACTTGA

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FIGURE 6A

Mouse histamine H4 receptor protein sequence (SEQ.IN.NO.:8)

MSESNSTGILPPAAQVPLAFLMSSFAFAIMVGNAVVLAFVVDRLNRHRSNYFFLNLAISDFL
VGLISIPLYIPHVLFNWNFGSGICMFWLITDYLLCTASVYNIVLISYDRYQSVSNAVSYRAQH
TGIMKIVAQMVA VWILAFLVNGPMILASDSWKNSTNTKDCEPGFVTEWYILTITMLLEFLLP
VISVAYFNVQIYWSLWKRRALSRCPSHAGFSTTSSSASGHLHRAGVACRTSNPGLKESAASR
HSESPRRKSSILVSLRTHMNSSITAFKVGSFWRSESAALRQREYAELLRGRKLARSLAILLSA
FAICWAPYCLFTIVLSTYPRTERPKSVWYSIAFWLQWFNSFVNPFLYPLCHRRFQKAFWKIL
CVTKQPALSQNQSVSS

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FIGURE 6B

Rat histamine H4 receptor protein sequence (SEQ.ID.NO.:9)

MSESNGTDVLPLTAQVPLAFLMSLLAFAITIGNAVVILAFVADRNLRHRSNYFFLNLAISDFF
VGVISIPLYIPHTLFNWNFGSGICMFWLITDYLLCTASVYSIVLISYDRYQSVSNAVRYRAQH
TGILKIVAQMVA VWILAFLVNGPMLASDSWKNSTNTEECEPGFVTEWYILAITAFLEFLLPV
SLVVYFSVQIYWSLWKRGSLSRCPSHAGFIATSSRGTGHSRRTGLACRTSLPGLKEPAASLH
SESPRGKSSLLVSLRTHMSGSIHAFKVGSFCRSESPVLHQREHVELLRGRKLARSLAVLLSAF
AICWAPYCLFTIVLSTYRRGERPKSIWYSIAFWLQWFNSLINPFLYPLCHRRFQKAFWKILCV
TKQPAPSQTQSVSS

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FIGURE 6C

Guinea Pig histamine H4 receptor protein sequence (389 amino acids)
(SEQ.ID.NO.:10)

MLANNSTIALTSIKISLTFLMSLLAIAIMLGNVVVILAFIVDRNLRHRSNYFFLNLAADFFVG
AIAIPLYIPSSLTYSWTSGKQACVFWLITDYLLCTASVYNIVLISYDRYQSVSNVWYRAQHS
GTWKIATQMVAVWIFSMTNGPMLISDSWQNSTTECEPGFLKKWYFALPTSLLLEFLIPILLV
AYFSAHIYWSLWKREKLSRCLSHPVLPDSSSSDHGHSCRQDPDSRATLPARKETTASLGSD
KSRRKSSLLFSIRAYKNSNVIASKMGFLSHSDSLALQQREHIELFRARKLAKSLAILLAFAIC
WAPYSLTTVIYSFFPERNLTKSTWYHTAFWLQWFNSFVNPFLYPLCHKRFQKAFLKILPVRR
QSTPPHNRSIST

Figure 7A
Nucleotide Sequence Comparison of Human (SEQ ID NO:1), Guinea Pig (SEQ ID NO:7), Mouse (SEQ ID NO:5), and Rat H4 (SEQ ID NO:6)

Human: ATGCCAGATACATAAGCACAAATCAATTTATACACTAAGCACTCGTGTTACTTTATAGCATTTTATATGTCCTTAGTAGCTTTTGCTATATGCTAGGAATGCTTTGGTCATTTTAGCTTTT 120
Guinea Pig: ATGTTGGCAATAACAGTACCAATCGCCTTAACA---TCAATTAATAATTTCTTTGACATTTTAAATGTCCTTTAGTAGCTATGCTATATGCTAGGCAATGCTGTCGTGCTCATTTTAGCTTTT 117
Mouse: ATGTCGGAGTCTAACAGTACTGGCATCTTGCACAGCTGCTCAGTCCCTTGGCATTTTAAATGCTTCAATTTGCTTTGCTATATGCTATATGCTAGGCAATGCTGTCGTGCTCATCTTAGCCTTTT 120
Rat: ATGTCGGAGTCTAACGGGCACTGACGCTGTGGCACTGTCCCTTGGCAATTTTAAATGTCCTGCTGCTTTTGTCTATAACGATAGGCAATGCTGTCGTGCTCATTTTAGCCTTT 120
Human: GTGCTGGACAAAAACCTTTAGACATCGAAAGTAGTTATTTTCTTAACTTGGCCATCTCTGACTCTTCTGCGGTGTAATCTCCATTTCTCTTTGTACATCCCTCACACGCTGTTTCGAAATG 240
Guinea Pig: ATTGTGGACAGAAATCTTAGACATCGAAAGTAATTAATTTTCTTAACTTGGCCATCTCTGACTCTTCTGCGGTGCAATTTGCAATTTCCATTTCTCTGTACATACCTTCCGCTACTTACTG 237
Mouse: GTGCTGGACAGAAACCTTTAGACATCGAAAGTAATTAATTTTCTTAACTTGGCCATCTCTGACTCTTCTGCGGTGTAATTTCCATTTCTCTGTACATCCCTCACACGCTGTTGTTAACTG 240
Rat: GTAGCAGACAGAAACCTTTAGACATCGAAAGTAATTAATTTTCTTAACTTGGCCATTTCTGACTCTTCTGCGGTGTAATCTCCATTTCTCTGTACATCCCTCACACGCTGTTTAACTG 240
Human: GATTTTGGAAAGGAAATCTGTGTATTTTGGCTCACTACTGACTATCTGTATGTATACAGCATCTGTATATAACATTTGCTCATCAGCTATGATCGATACCTGTCTAGTCTCAAAATGCTGTG 360
Guinea Pig: ACTTCTGGAAAGCAAGCTTGTGTATTTTGGCTCATTACTGACTATCTTTTATGTAACAGCATCTGTGTATATAATTTGCTCATCAGCTACGATCGCTACCACTAGTCTCAAAATGCTGTG 357
Mouse: AATTTTGGAGTGGAAATCTGCATGTTTGGCTCATTACTGACTATCTTTTGTGCACCGCATCTGTCTACAAATTTGCTCTCATTAAGTACGATCGATACCACTAGTCTAGTCTTCAAAATGCTGTG 360
Rat: AATTTTGGAGTGGAAATCTGCATGTTTGGCTCATTACTGACTATCTTTTGTGCACAGCATCCGCTACAGATATGTCCTCATTAAGTACGATCGATACCACTAGTCTTCAAAATGCTGTG 360
Human: TCTTATAGAACTCAACATACATCTGGGTCTTGAAGATTTGTTACTCTGATGCTGGCGCTTTGGGTGCTGCTTCTTGTGAAATGGGCCCAATGATTTCTAGTTTCAGACTCTTTGGAGGATGAA 480
Guinea Pig: TGGTATAGAGCTCAGCACTCTGGCACCTGGAAATTTGCTACTCAGATGGTGGCTGTTTGGATATTTCTCTTCAPGACAAATGGGCCCAATGATTTCTAGTTTCAGACTCTTTGGAGCAAGATAG 477
Mouse: TCTTATAGAGCTCAACACACTGGCATCATGAAGATTTGTCCTCAAAATGGTGGCTGTTGGATATCTGGCTTCTTGGTAAATGGGCCCAATGATTTCTAGTTTCAGACTCTTTGGAGCAAGATAG 480
Rat: CGTTATAGAGCACAGCACACTGGCATCTCTGAAATTTGTCCTCAAAATGGTGGCTGTTGGATATCTGGCTTCTTGGTCAATGGGCCCAATGATTTCTAGTTTCAGACTCTTTGGAGCAAGATAG 480
Human: GGT---AGT---GAATGTGAACCTGGATTTTTCGGAAATGGTATACATCTTGGCAATTCGTGATCCCAAGTCCAGTCTATCTTAGTCGCTTATTTTCAACATGAATATTTAT 594
Guinea Pig: ACT---ACA---GAATGTGAACCTGGATTTTAAAGTGGTACTTTTGTCTCTCCCTACATCATATATGGAAATTCCTGATCCCAATCTTGTAGTTGCTTATTTTTCAGCGCCCATATTTTAC 591
Mouse: ACGAACACAAAGGACTGTGAGCCTGGCTTGTGTACAGAGTGGTATACATCTCACCATTACAAATGCTCTTGGAAATTCCTGCTTCTGCTCATCTCTGTCGTCTTATTTTCAATGTACAGATTTTAC 600
Rat: ACCAACACAGAGGAGTGGGCTTGTGTACTGAGTGGTATCATCTCGGCATACAGCATCTTGGAAATTCCTGCTCCCTGTCTCTTGGTGGTCTATTTTCAGTGTACAGATTTTAC 600
Human: TGGAGCCTGTGGAGCGTGTATCATCTCAGTAGGTGCCAAAGCCATCTGGAAGTCTGCTCTCTTCCAACTCTGGGACACTCAATTCAGAGGTAGACTATCTTCAAGGAGATCT 711
Guinea Pig: TGGAGCCTGTGGAGCGAGAGAACTGAGCAGGTGCTCAGCACCGCTGTACTCCCTCTGACTCTTCAGAGTACCAAGGACACTCTCTGAGACAGGACCCCGATTTCAAGGGGACT 711
Mouse: TGGAGCCTGTGGAGCGTAGGGCTCTCAGTAGGTGCGCTCAGCCATGCTGATTC---TCCACTACCTCTTCCAGTGTCTCAGGACACTTACAGAGCTGGGTGGCTTGGCAGGACAACT 717
Rat: TGGAGCCTGTGGAGCGTGGAGTCTCAGTAGGTGCGCTCAGCCACGCTGGATTC---ATCGCTACCTCTTCCAGGGGCACTGGGACACTCAGCGAGAACTGGGTGGCTTGTAGGACAACT 717
Human: CTTTCTGCATCGAAGAAAGTTCCTGCATCTCTTCAATTCAGAGAGACAGAGGAGAAAGTAGTCTCATGTTTCTTCCAAAGCAAGATGAATAGCAATACAAATGCTTCCAAAATGGGT 831
Guinea Pig: CTGCCAGCAGGAAAGAAACAACTGCTCTCTTGGTTCAGACAACTCAGGAGAAAGACAGTCTCTTGTTCATAAGAGCCTACAGAAACAGCAATGTGATCGCTTCCAAAATGGGC 831
Mouse: AATCTGTGATTTGAAGAACTCAGTGCATCTGCTCACTCAGAAAGTCTCCTGAGAGAAAGACAGCATCTCTGTGTCTCTTAAGAGACTTCAAGACAGCACTATCATGCTCTTCAAGTGGGT 837
Rat: CTTCTGTGATTTAAGGAACCCAGCCGCTCCCTTCATTTCAGAAAGTCCAGAGAAAGACAGTCTCTCTGTGTCTCTTAAGGACTCACAATGAGCGGTAGTATCATCGCTTCAAGTGGGT 837
Human: TCCTTCTCCCAATCAGATTTCTGTAGCTTCTTCCAAAAGGGAACATGTTGAACTTTCAGAGCAGGAGAAATAGCAAGTCACTGGCCATCTCTTTAGGGGTTTTTGTCTTTGTCTGGGCT 951
Guinea Pig: TTCTCTCTCCCACTCAGATTTCCCTGGCTTCTTCCAGCAAAAGGGAACATATCGAATTTTCAGAGCAGGAAATAGCCAGTCACTGGCCATCTCTTTCAGAGCTTTTGTGCCATTTGTCTGGGCT 951
Mouse: TCCTTCTGGCGATCGGAAAGTGCAGCGCTTCTCCCAAGAGGAGTGCAGAGCTTCTCAGAGGAGGAAATAGCCAGTCACTGGCCATCTCTTTCAGAGCTTTTGTGCCATTTGTCTGGGCT 957
Rat: TCCTTCTGCCGATCAGAAAGCCCACTGCTTCCACAGAGAGACAGTGGAGCTTCTCAGAGGAGGAAAGTACCCAGGTCTAGCTGTCTCTCTGAGTGTCTTTTGGCCATTTGTCTGGGCT 957

Figure 7B

| Species | Accession | Sequence |
|------------|-----------|--|
| Human | 1071 | CCATATTCTGTGCACAAATTGCTCTTCAATTTATTCCTCAGCAACAGGTCCTAAATCAGTTTGGTATAGAAATGCATTTTGGCTTCAGTGGTTCAATTCCTTTGTCAATCCTCTTTG |
| Guinea Pig | 1071 | CCATATTCACTGACTCAGTTATCTACTCATTTTTTCTGAAAGGAACTTGACTAAATCBAACCTGGTACCATCTAGCTGCTTCGCTCCAGTGGTTCAATTCCTTTGTTAAATCCCTTTTGG |
| Mouse | 1077 | CCATACTGTGTCTCACAATTTGCTCTTCAACTATACCCAGAGACGGCCCAATCGGTGTGGTACAGCATATGCTCTCTTGGCTCGAATGGTTCAATTCGTTTGTAAATCCCTTTCTG |
| Rat | 1077 | CCGTAATTGCGCTGTGCACAAATGTGTTCTTTCAACTTATTCGACAGAGGGAGGGCCCCAAATCGAATTTGGTACAGCATAGCCTTTTGGCTCAGTGGTTCAATTCACATTTAAATCCCTTTCTTA |
| Human | 1173 | TATCCATTGTGTCAACAGGGCTTTTCAAAAGGCTTTCTTTGAAATAATTTTGTATATAAAAGCAACCTCTACCATCACAAACACAGTCGGTTCAGTATCTTCTTAA |
| Guinea Pig | 1170 | TATCCATTGTGTCAACAAAGCTTTTCAGAAAGGCTTTCTTGAAATATCTTCTGTGGAAGGCAATCCACGGCCACA---CACAAACCGGTCAATATCCACTTGA |
| Mouse | 1176 | TACCCCTTTGTGTCAACAGGCTTTCCAGAAGGCTTTCTTGGAAAGTACTTTGTGTGACAAAGCAACACCGGCTGTCA---CAGAACCAGTCAGTATCTTCTTCTGA |
| Rat | 1176 | TACCCCTTTGTGTCAACAGGCTTTTCAGAAGAGTCTTTTGTGTGACAAAGGCAACACCGACACGACGCTGTCA---CAGACCCCACTCAGTATCTTCTTCTGA |

Figure 8 Amino Acid sequence Comparison of Human (SEQ ID NO:2), Guinea Pig (SEQ ID NO:10), Mouse (SEQ ID NO:8) and Rat H4 (SEQ ID NO:9)

| | | |
|-------------|---|-----|
| Human: | MPDTNSTINLSLSTRVTLAFFMSLVAFAIMLGNALVILAFVVDKRLRHRSSYFFLNLAISDFVGVISIPLYIPHTLFEWDFGKEICVFWLITDYLCTA | 100 |
| Guinea Pig: | MLANNSTIALT-SIKISLTFELMSLLAIAIMLGNVVVILAFIVDRNLHRHSNYFFLNLAIADEFVGAIAIPIYIPSSLTWTSGKQACVFWLITDYLCTA | 99 |
| Mouse: | MSESNTSTGILPPAAQVPLAFLMSSEFAIMVGNVAVILAFVVDKRLRHRSSYFFLNLAISDFLVGLISIPLYIPHTLVFNWFGSGICMFWLITDYLCTA | 100 |
| Rat: | MSESNTGTDVLPPLTAQVPLAFLMSLLAFATIGNAVVILAFVADRLRHRSSYFFLNLAISDFVGVISIPLYIPHTLVFNWFGSGICMFWLITDYLCTA | 100 |
| Consensus: | M..N.T.L.:...:L:F:MSL:A:AIM:GN.:VILAF.:D:NLHRHS:YFFLNLA:DF.VG.I:IPLYIP.:L.W.G.:C:FWL.TDYLCTA | |
| | TM1 | |
| Human: | SVYNIVLISVDRLSVSNVAVSYRTQHTGVLKIVITLMVAVWLAFVNGPMLVSESWKDEG-S-ECEPGFFSEWYILAITSFLEFVIPVLVAYFNMNIY | 198 |
| Guinea Pig: | SVYNIVLISVDRLSVSNVAVSYRAQHTGIMKIVAQMVAVWILAFVNGPMLASDWNKSTNKDCEPGFVTEWYILITITMLLEFLLPVLSVAYFNVQIY | 197 |
| Mouse: | SVYNIVLISVDRLSVSNVAVSYRAQHTGIMKIVAQMVAVWILAFVNGPMLASDWNKSTNKDCEPGFVTEWYILITITMLLEFLLPVLSVAYFNVQIY | 200 |
| Rat: | SVYSIVLISVDRLSVSNVAVSYRAQHTGILKIVAQMVAVWILAFVNGPMLASDWNKSTNTECEPGFVTEWYILITAFLEFLLPVLSVAYFNVQIY | 200 |
| Consensus: | SVYNIVLISVDRLSVSNVAVYR:QH:G.KI..MVAVW:..F:NGEMIL:S:SW:...:CEPGF...WY:...:T:LEF::P::VAYF:::IY | |
| | TM2 | |
| Human: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 297 |
| Guinea Pig: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 297 |
| Mouse: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 299 |
| Rat: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 299 |
| Consensus: | WSLWKR:LSRC.SH.:..SS.GH.R.:R:R:KSSL::S.R:.....A.K.G::S:S::L:Q.E::EL:R | |
| | TM3 | |
| Human: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 390 |
| Guinea Pig: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 389 |
| Mouse: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-NQSVSS | 391 |
| Rat: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-TQSVSS | 391 |
| Consensus: | .R:LA:SLA:IL:..FA:CWAPY:L.T::S...:KS.WY:..AFWLQWNS::NP:LYPLCH:RFQKAF.KI:..Q:..:RS:S: | |
| | TM4 | |
| Human: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 297 |
| Guinea Pig: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 297 |
| Mouse: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 299 |
| Rat: | WSLWKRDLHSRCQHPGL-TAVSSNICGHSFRGLSSRRSLASSTEVPAFHSERQRRKSSILMFSSRTKMSNTIASKMGFSQSDSVALHQREHVELLR | 299 |
| Consensus: | WSLWKR:LSRC.SH.:..SS.GH.R.:R:R:KSSL::S.R:.....A.K.G::S:S::L:Q.E::EL:R | |
| | TM5 | |
| Human: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 390 |
| Guinea Pig: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 389 |
| Mouse: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-NQSVSS | 391 |
| Rat: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-TQSVSS | 391 |
| Consensus: | .R:LA:SLA:IL:..FA:CWAPY:L.T::S...:KS.WY:..AFWLQWNS::NP:LYPLCH:RFQKAF.KI:..Q:..:RS:S: | |
| | TM6 | |
| Human: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 390 |
| Guinea Pig: | ARRLAKSLAILLGVFAVCWAPYSLFTIVLSFYSSATGPKSVWYRIAFWLQWNFSEVFNPLLYPLCHKRFRQKAFKIFCIKKQPLPSQHSRSVSS | 389 |
| Mouse: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-NQSVSS | 391 |
| Rat: | GRKLARSAILLSAFAICWAPYCLFTIVLSTYPRTERPKSVWYRIAFWLQWNFSEVFNPLLYPLCHRRFRQKAFWKILCVTKQPALSQ-TQSVSS | 391 |
| Consensus: | .R:LA:SLA:IL:..FA:CWAPY:L.T::S...:KS.WY:..AFWLQWNS::NP:LYPLCH:RFQKAF.KI:..Q:..:RS:S: | |
| | TM7 | |